What is claimed is:

1. A method of processing a composite component, comprising:

providing a lay-up mandrel having a non-planar portion;

forming a prepreg material on the non-planar portion of a lay-up mandrel;

providing an elastomeric caul over the prepreg material in an initial position such that a first portion of the elastomeric caul is proximate the prepreg material on the lay-up mandrel, and a second portion of the elastomeric caul adjacent the first portion is spaced apart from the prepreg material;

reducing a pressure within a space disposed between the elastomeric caul and the lay-up mandrel proximate the non-planar portion; and

simultaneously with the reducing of the pressure with the space, stretching the elastomeric caul into a second position such that the second portion of the elastomeric caul is drawn proximate to at least one of the prepreg material and the lay-up mandrel.

2. The method of Claim 1, further comprising applying at least one of an elevated temperature and an elevated pressure to the prepreg material.

3. The method of Claim 1, wherein providing an elastomeric caul over the prepreg material in an initial position includes at least one of tensioning and stretching at least the second portion of the elastomeric caul.

4. The method of Claim 1, wherein providing a prepreg material on a non-planar portion of a mandrel includes providing a prepreg material on a step-shaped portion of the mandrel.

5. The method of Claim 4, wherein the step-shaped portion of the mandrel includes an upper step portion, a middle step portion extending downwardly from the upper step portion, and a lower step portion extending away from the middle step portion, and

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wherein providing an elastomeric caul over the prepreg material in an initial position includes providing the elastomeric caul over the prepreg material such that the first portion of the caul is engaged with the prepreg material on the upper step portion and the second portion of the caul extends between the upper step portion and the lower step portion.

6. The method of Claim 5, wherein providing an elastomeric caul over the prepreg material in an initial position includes providing the elastomeric caul over the prepreg material such that a third portion of the caul adjacent the second portion and opposite the second portion from the first portion is engaged with the lower step portion of the mandrel.

7. The method of Claim 1, wherein providing an elastomeric caul over the prepreg material in an initial position includes securing a third portion of the elastomeric caul into a fixed position relative to the mandrel, the third portion of the caul being adjacent the second portion and opposite the second portion from the first portion.

8. The method of Claim 7, wherein securing a third portion of the elastomeric caul includes securing the elastomeric caul using at least one of a snap, a hook-and-loop fastener, and a clamping member.

9. The method of Claim 1, wherein reducing a pressure within a space disposed between the elastomeric caul and the mandrel includes securing a third portion of the elastomeric caul into a fixed position relative to the mandrel by reducing the pressure within the space.

10. The method of Claim 1, further comprising providing a release layer between the prepreg material and the elastomeric caul.

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11. The method of Claim 1, wherein comprising providing an elastomeric caul over the prepreg material in an initial position further includes providing an elastomeric caul having a third portion adjacent the first portion and spaced apart from the prepreg material, and wherein stretching the elastomeric caul into a second position further includes stretching the elastomeric caul such that the third portion is drawn proximate to at least one of the prepreg material and the lay-up mandrel.

12. A method of manufacturing an aircraft component, comprising:

forming a composite material on a non-planar portion of a mandrel;

providing an elastomeric caul over the composite material in an initial position such that a first portion of the elastomeric caul is proximate the composite material on the lay-up mandrel, and a second portion of the elastomeric caul adjacent the first portion is spaced apart from the composite material;

reducing a pressure within a space disposed between the elastomeric caul and the lay-up mandrel proximate the non-planar portion;

simultaneously with the reducing of the pressure with the space, stretching the elastomeric caul into a second position such that the second portion of the elastomeric caul is drawn proximate to at least one of the composite material and the lay-up mandrel; and

curing the composite material.

13. The method of Claim 12, wherein curing the composite material includes applying at least one of an elevated temperature and an elevated pressure to the composite material.

14. The method of Claim 12, wherein providing an elastomeric caul over the composite material in an initial position includes at least one of tensioning and stretching at least the second portion of the elastomeric caul.

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15. The method of Claim 12, wherein providing a composite material on a non-planar portion of a mandrel includes providing a composite material on a step-shaped portion of the mandrel, the step-shaped portion having an upper step portion, a middle step portion extending downwardly from the upper step portion, and a lower step portion extending away from the middle step portion, and wherein providing an elastomeric caul over the composite material in an initial position includes providing the elastomeric caul over the composite material such that the first portion of the caul is engaged with the composite material on the upper step portion and the second portion of the caul extends between the upper step portion and the lower step portion.

16. The method of Claim 15, wherein providing an elastomeric caul over the composite material further includes providing the elastomeric caul over the composite material such that a third portion of the caul adjacent the second portion and opposite the second portion from the first portion is engaged with the lower step portion of the mandrel.

17. The method of Claim 12, wherein providing an elastomeric caul over the composite material in an initial position includes securing a third portion of the elastomeric caul into a fixed position relative to the mandrel, the third portion of the caul being adjacent the second portion and opposite the second portion from the first portion.

18. The method of Claim 12, wherein reducing a pressure within a space disposed between the elastomeric caul and the mandrel includes securing a third portion of the elastomeric caul into a fixed position relative to the mandrel by reducing the pressure within the space.

19. The method of Claim 12, wherein comprising providing an elastomeric caul over the composite material in an initial position further includes providing an elastomeric caul having a third portion adjacent the first portion and spaced apart from the composite

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material, and wherein stretching the elastomeric caul into a second position further includes stretching the elastomeric caul such that the third portion is drawn proximate to at least one of the composite material and the lay-up mandrel.

20. An assembly for processing a prepreg material into a composite component, comprising:

a mandrel having a non-planar portion, the mandrel being adapted to receive the prepreg material thereon; and

an elastomeric caul adapted to be positioned over at least part of the mandrel such that in an initial position, a first portion of the caul is proximate the prepreg material, and a second portion of the caul adjacent the first portion is spaced apart from the prepreg material and the mandrel, the elastomeric caul being further adapted such that when a pressure within a space disposed between the elastomeric caul and the non-planar portion of the mandrel is reduced, the elastomeric caul is stretched to a second position such that the second portion of the caul is proximate to at least one of the prepreg material and the mandrel.

21. The assembly of Claim 20, wherein the non-planar portion of the mandrel includes a step-shaped portion having an upper step portion, a middle step portion extending downwardly from the upper step portion, and a lower step portion extending away from the middle step portion.

22. The assembly of Claim 20, wherein at least one of the mandrel and the elastomeric caul includes an attachment assembly adapted to couple a third portion of the caul in a fixed position relative to the mandrel, the third portion being adjacent the second portion and opposite the second portion from the first portion.

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23. The assembly of Claim 20, wherein the attachment assembly includes at least one of a snap, a hook-and-loop fastener, and a clamping member.

24. The assembly of Claim 20, further comprising a release layer disposed between the elastomeric caul and the mandrel and adapted to substantially prevent the elastomeric caul from becoming attached to the prepreg material.

25. The assembly of Claim 20, further comprising a curing apparatus adapted to apply at least one of an elevated temperature and an elevated pressure to the prepreg material.

26. The assembly of Claim 20, wherein the elastomeric caul is further adapted such that in the initial position, a third portion of the caul adjacent the first portion is spaced apart from the prepreg material and the mandrel, the elastomeric caul being further adapted such that when the pressure within the space is reduced, the third portion of the caul is proximate to at least one of the prepreg material and the mandrel.

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